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A NEW MUSSEL,
POTAMILIS METNECKTAYI (BIVALVIA: UNIONIDAE)
FROM THE RIO GRANDE SYSTEM,
MEXICO AND TEXAS
WITH NOTES ON MEXICAN *DISCONAIAS*

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ABSTRACT: *Potamilis metnecktayi*, a new species of Unionidae from the Rio Grande system of Mexico and Texas, is described. It has been mistaken for *Lampsilis (Proptera) salinasensis* Simpson, 1908, which is a synonym of both *Lampsilis fimbriata* Frierson, 1907 and *Disconaias disca* (Lea, 1838) from the Rio Panuco System. Also discussed are *Potamilis purpurata* (Lamarck, 1819), *Cyrtoraias tampicoensis* (Lea, 1838), *Disconaias walkeri* (Baker, 1922), and *Lampsilis explicata* (Morelet, 1849).

INTRODUCTION

The supposed correction of the non-existent type locality of *Lampsilis (Proptera) salinasensis* Simpson, 1908, from "Salinas River, Coahuila, Mexico" to "Rio Sabinas, at Sabinas, Coahuila" by Taylor (1966: 165) led Artie L. Metcalf

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(1982: 48), Raymond W. Neck and Metcalf (1988: 262), and Dwight W. Taylor (unpublished *ms.*) to assume that the species described here, in their honor, was the one described by Simpson. It is here shown that Simpson's species is at a synonymy of *Lampsilis fimbriata* Frierson, 1907, which itself is probably a young *Disconaias disca* (Lea, 1838), all from the Rio Panuco System, Mexico. In his synonymy of *L. fimbriata*, Frierson (1927: 83) included *Unio aztecorum* forma *major* Martens, 1900 and *Actinoniaias walkeri* H. B. Baker, 1922. Taylor (1997) discussed Marten's *forma major* but did not actually resolve its identity, and thought it is probably merely an old *aztecorum*. Frierson, subsequently seeing a large specimens of his *L. fimbriata* sent to him by its original collector, A. A. Hinkley, was led by its superficial resemblance to the type of *A. walkeri* to place this distinct species, also discussed here, from the Rio San Juan in the synonymy of *fimbriata*.

Much of the information on the plate captions is not repeated elsewhere.

Abbreviations:

ANSP:	Academy of Natural Sciences of Philadelphia, Pennsylvania
JANSP:	Journal of the Academy of Natural Sciences, Philadelphia
MCZ:	Museum of Comparative Zoology, Cambridge, Massachusetts
PANSP:	Proceedings of the Academy of Natural Sciences, Philadelphia
TAPS:	Transactions of the American Philosophical Society
UMMZ:	Museum of Zoology, University of Michigan, Ann Arbor, Michigan
USNM:	National Museum of Natural History, Smithsonian Institution, Washington, District of Columbia
UTEP:	Department of Biological Sciences, The University of Texas at El Paso, El Paso, Texas.

Family UNIONIDAE Rafinesque, 1820

Subfamily LAMPSILINAE (Ihering, 1901) Ortmann, 1910

Genus *Potamilis* Rafinesque, 1818

Type species: *Unio alatus* Say, 1817, by subsequent designation (Morrison, 1969). Placed on the Official List of Generic Names in Zoology (1992, Bulletin of Zoological Nomenclature **49** (1): 81), replacing the well-known taxon *Proptera* Rafinesque 1819. The case is closed, but for a historical discussion see Johnson (1980: 128).

Potamilis metnecktayi new species

(Plate 22, figures 1, 2)

Lampsilis salinasensis Metcalf 1982 *non* Simpson, [in] Davis, Proc. Symposium Recent Benthological Investigations in Texas and Adjacent States, p. 48, pl. 2, fig. 2.

Potamilus salinasensis Neck and Metcalf 1988, *non* Simpson, Texas Jour. Sci. **40**: 262; Howells, Neck, and Murray, 1996, *non* Simpson, *Freshwater mussels of Texas*, p. 103, figs., p. 212, col. figs.

Potamilus (Disconaias) salinasensis Howells and Garrett 1995 *non* Simpson, Triannual Unionid Report no. **8**: [10].

Holotype. UMMZ 255018 from Rio Salado, 45 mi. S Nuevo Laredo, State of Tamaulipas, Mexico, male; allotype UMMZ 255019 from the same locality.

Paratypes. UMMZ 66993 also from type locality; paratype UTEP 2519 from Rio Grande, 6 mi. W Del Rio, Val Verde Co., Texas.

Length (mm)	Height (mm)	Width (mm)	
109	65	33	Holotype UMMZ 255018, Male
83	56	31	Allotype UMMZ 255019
69	42	24.5	Paratype UTEP 2519, Female

Description: Shell medium, probably reaching over 120 mm in length. Outline somewhat obovate. Valves moderately inflated; shell solid. Anterior end regularly rounded, posterior end more broadly rounded, angled above and somewhat pointed in males; females more broadly round. Ventral margin straight or slightly curved. Dorsal margin broadly curved, somewhat convex, and winged at the meeting of the posterior margin. Posterior slope with double, sometimes triple, radiating ridges. Umbos slightly elevated above the hinge line, located in the anterior quarter of the shell, their sculpture not observed. Ligament long and prominent. Surface of the shell with fine concentric raised threads and irregular ridges, covered with a lightly shining brownish periostracum with hints of green, and with faint rays, especially in young specimens. Left valve with two pseudocardinal teeth, and two short, slightly curved lateral teeth. Right valve with two pseudocardinal teeth, the anterior one tiny, with a large, trigonal posterior tooth, and a single lateral one. Beak cavities rather shallow. Anterior adductor muscle scars well impressed, posterior ones faint. Pallial line distinct. Nacre white to bluish white, and iridescent. Howells, *et al.* (1996: 104) report a specimen with a nacre of a pale salmon tint.

Breeding season: Not known.

Anatomy: Studying a single male *P. metnecktayi*, Taylor (*ms.*) observed that the mantle margin and gill structure which he compared to that of a specimen of *P. purpurata* (Lamarck), had a similar "preforate mantle between [the] anal and supra-anal openings, a structure previously unknown," and suggested that these two species should be placed in a new sub-genus. He may still be of this opinion, though the entire genus probably consists of fewer than half a dozen valid species.

Remarks: *Potamilis metnecktayi* appears to be restricted to the Rio Grande System of Mexico and Texas. It is most

similar to *P. purpurata* (Lamarck, 1819), which occurs in the Interior Basin on the west side of the Mississippi River from the White River Drainage, Missouri, south through the drainages of Kansas, Oklahoma, and Arkansas; it also occurs to the east in the Hatchie River Drainage, Tennessee. In the Gulf Coastal Region, it now appears to extend from the Rio Grande System, Texas, to the Mobile-Alabama-Coosa River System, Alabama and northern Georgia.

The occurrence of *P. purpurata* (Plate 23, figure 1) in the Guadalupe River System is based on three records: Blanco River Drainage. Wimberly Lake, Hayes Co. (UMMZ 79411); Guadalupe River Drainage. Guadalupe River, Seguin, Guadalupe Co. (Wurtz, 1950: 2, ANSP); and Guadalupe River, Victoria Co. (Strecker, 1931: 45, Mitchell List). It was not formerly reported from the San Antonio or Nueces River Systems which intervene between the Rio Grande System. The two published records from the latter system are probably based on misidentifications. They are: Pecos River Drainage. Mouth of Pecos River [Val Verde Co.] (Stearns, 1891: 104 "single right valve of a half-grown individual [of *Unio coloradoensis* Lea] William Lloyd"), which was not located in the USNM by Taylor, 1986 (*ms.*); and Devils River Drainage, Blaines Lake, Val Verde Co. (Strecker, 1931: 45, R. C. Edgar). Neck and Metcalf (1988: 264) may not have found this lot in the Strecker Museum (Baylor University, Waco, Texas), but their examination of the collection led them to state, "that Strecker often confused *P. purpuratus* with *Cyrtonaias tampicoensis berlandieri* (Lea, 1857)." Both of these records were probably based on specimens of what is now known as *Cyrtonaias tampicoensis* (Lea, 1838) (pl. 23, fig. 2; pl. 24, figs. 1,2) a species of which Neck and Metcalf (1988: 259) found abundant in the lower Rio Grande, but where they did not locate *P. purpurata*. Recently however, Howells *et al.* (1996: 100) reported that *P. purpuratus* was found in the Nueces River System, Lake Corpus Christi, Live

Oak County, Texas in 1993 and that it was an introduction. They also reported specimens from the Rio Grande System, Amistad Reservoir and Devils River, Val Verde County, collected in 1994 and 1995, the identity of these specimens was confirmed with electrophoretic analysis and suggested that these too represent an introduced population.

Both *P. purpurata* and *metnecktayi* have similar general outlines in both male and female shells, and like all species of *Potamilis*, and some other members of North American genera, they have a shallow dorsoposterior sulcus bordered by two weak ridges. The shell of *purpurata* is much more inflated, especially in the umbonal region, is heavier, grows much larger, and has a purple nacre whereas that of *metnecktayi* is white.

The only other species in the Rio Grande with which *metnecktayi* might be confused is the abundant *C. tampicoensis* which is more rotund, there being little sexual difference expressed in the shell; the umbos are more centrally located, the periostracum is often polished and yellowish with green rays, and the nacre is often pinkish. It has recently been discussed and figured by Howells (1996: 24) and Howells *et al.* (1996: 48, figs., p. 205, col. figs.).

Possibly because Simpson suggested *Proptera* as the subgenus of *Lampsilis salinasensis* as well as associating it with the Rio Grande System, Neck and Metcalf as well as Taylor (*ms.*) were led to think that the immature specimens described by Simpson were the species described here, but they are young examples of *Disconaias disca* (Lea, 1838) from the Panuco River System, Mexico.

Distribution: Endemic to the lower Rio Grande System, Mexico and Texas.

RIO GRANDE SYSTEM

Rio Grande Drainage. Texas: Rio Grande at San Francisco Creek, Brewster Co. (Howells *et al.* 1996: 103, figs.).

Pecos River Drainage. New Mexico: Pecos River, below McMillan Dam, Eddy Co., Pleistocene, outside present range (Metcalf 1982, loc. 2, [not seen]). Texas: mouth of Pecos River, at former US 90 bridge (now flooded by Amistad Reservoir), Val Verde Co. (Taylor, *et al.*, July 1968 [not seen]).

Rio Grande Drainage. Texas: Rio Grande, 6 mi. W Del Rio, Val Verde Co. (Metcalf, October 1972, UTEP 2519). Rio Grande, Chapengo gaging station (Metcalf, December 1975, UTEP 4660); Rio Grande, Roma (Metcalf, December 1975, UTEP 4639 [not seen]); *both* Star Co.

Rio Salado Drainage. State of Coahuila, Mexico: sediments S bank, Rio Salado, Municipio Villa Juarez (Metcalf, 1982, loc. 10, p. 48, pl. 2, fig. 2 UTEP 4844 [not seen]). State of Tamaulipas : Rio Salado, 45 mi. S Nuevo Laredo (M. M. Ellis, July 1929, UMMZ 66993). State of Nuevo Leon : Rio Salado, Lampozos (ANSP 44200 [not seen]).

Genus *Disconaias* Crosse and Fischer, 1894

Type species, *Unio discus* Lea, 1838, original designation [introduced as a new section]; 1894 [in] Fischer and Crosse, Mission Scientifique au Mexique, part 7, 2: 556.

Crosse and Fischer [*in*] Fischer and Crosse (1894: 555-57) divided the Mexican and Central American Unionidae into nineteen sections, most with a type species by original designation. Some of these were later given generic standing by both Martens and Simpson in 1900. Frierson (1917: 48) proposed that *Actinonaias* (type species, *Unio sapotalensis* Lea, 1841) be raised to generic level. It was so used by Ortmann and Walker (1922: 47) and Baker (1922: 20). Frierson later (1927) reduced *Actinonaias* to a subgenus, but retained Baker's use of *Disconaias* (type species, *Unio discus* Lea, 1838) as a subgenus and raised *Cyrtonaias* (type species, *Unio berlandieri* Lea, 1857) to a subgenus. Haas (1969) essentially merely copied Frierson's classification of the North American Unionacea. Heard and Guckert (1971: 340) and Fuller (1975) both use *Cyrtonaias* as a genus. Their

usage and that of *Disconaias* as a genus by Taylor (1997) is followed here. It hardly seems necessary to indicate that the status of Mexican and Central American Unionid genera is not resolved.

Disconaias disca (Lea, 1838)

(Plate 25, figures 1, 2; Plate 26, figures 1, 2)

- Unio discus* Lea, 1838, TAPS 6: 74, pl. 18, fig. 57 (Obs. *Unio* 2: 74); 1843, TAPS 8: 243, (Obs. *Unio* 3: 72). Holotype USNM 85341 [single valve] (Moctezuma [sic] River, a southern confluent of the Panuco [teste Martens 1900: 510]).
- Unio panacoensis* Busch [in] Philippi, 1843, *Abbild. und Beschr. Conch.* 1: 75, pl. 2 Lectotype, have selected, MCZ 178882 (Flumen Pancao prope Tampico [Panuco River, near Tampico, Tamaulipas State, Mexico] (pl. 25, fig. 2) from Busch ex J.G. Anthony).
- Unio mexicanus* Sowerby, 1867, [in] Reeve, *Conch. Iconica* 16, *Unio*, pl. 55, species 281 Lectotype BMNH 79.2.26.281 (Mexico) inadvertently selected by Johnson (1971: 88) as "holotype."
- Unio lapidosus* Villa [in] Kobelt, 1893, *Nach. Bl. Deutsch. Malacoz. Gesellsch.* 25: 151 (Fluvio Euphrates [erroneous, teste Martens 1900, pp. 511, 651]); 1893, *Rossmässler's Icon.* (2) 6: 90, pl. 176, fig. 1120 (Figured type, Zoologisches Museum, Humboldt Universität, Berlin).
- Unio discus connectens* Martens, 1900, *Bio. Cent. Americana* 9: 510 (Rio Panuco, near Tampico [Tamaulipas State, Mexico]). Based on *Unio panacoensis* Busch (Küster 1861, *Conch. Cab.* (2) 9, 2: 242, pl. 18, fig. 1), and *Unio mexicanus* Sowerby, 1867.
- Lampsilis fimbriata* Frierson, 1907, *The Nautilus* 21: 86, pl. 12, two upper figs. (type) and lower left one (Valles River [near Valles, State of San Luis Potosi, Mexico], A. A. Hinkley; holotype UMMZ 87579 refigured by Johnson (1972: 144, pl. 27, fig. 2); 2 paratypes USNM 207440; 3 paratypes MCZ 167699; paratypes ANSP 99547-9). Pilsbry, 1910, PANSP 61: 553. Simpson, 1914, *Cat. naiades* 1: 177.
- Paraptera* (?) *fimbriata* (Frierson), Ortmann 1912, *Annals of the Carnegie Mus.* 8: 332.
- Lampsilis*(*Disconaias*) *fimbriata* Frierson 1927, *Check List N. American naiades*: 83; Haas 1969, 467.
- Actinonaias* (*Disconaias*) *fimbriata* (Frierson) Taylor (1966, *The Veliger* 9: 165.

Lampsilis (Proptera) salinasensis Simpson, 1908, [in] Dall, Proc. U.S. Nat'l. Mus. 35: 181, pl. 30, fig. 3 (Salinas River, Coahuila, Mexico, Nelson and Goldman; type locality, here restricted, to the second locality, Valles River, Valles, State of San Luis Potosi, Mexico. Lectotype USNM 163156 inadvertently selected by Johnson (1975: 9) as the "figured holotype," paralectotype USNM 251834; also 2 paralectotypes USNM 196262 and paralectotype USNM 207440, both labeled: Valles River, Valles, Mexico, A.A. Hinkley).

In the introduction to his paper, Dall (1908: 177) stated that, "some species collected by Nelson and Goldman in 1898, which though recognized as new and *figured at that time* [this author's italics], have not been hitherto published." Simpson mentioned that he had three specimens, all probably young and female, apparently exclusive of the three specimens from Hinkley. While Metcalf (1982: 48) refers to USNM 251834, as "a series of paratypes," this lot now consists of a single specimen with a label that reads the same as that of the figured holotype, but with "paratype = *fimbriata fide* Simpson" on the verso. Metcalf (1982: 49) called attention to an additional label with this paratype "older in appearance [which] reads, 'May 26, 1902, Sabinas R., Sabinas, Coahuila, Mexico, Nelson and Goldman.'" It also has "*Lampsilis fimbriata* Frierson" on the verso, not mentioned by Metcalf.

Nelson and Goldman went to Mexico mainly to collect birds and mammals, but they did pick up other natural history objects. In the summary of their expedition, Goldman (1951: 131) mentioned that they spent 10 days between May 20-31, 1902 at Sabinas, a town on the railroad in eastern Coahuila, and that the Rio Sabinas is, "easily fordable except after rains which bring down flood water. Recent rains have brought out many wild flowers." Even if the river had receded sufficiently during the time Nelson and Goldman were at this station to make collecting in it feasible, the supposed date of doing so on May 26, halfway through their stay, hints that this

is the newer label. It is suggested here that this label is an attempt to locate the imaginary Salinas River based on a subsequent interpretation of the field notes.

As previously mentioned, Dall specifically stated that the material was collected in 1898. Taylor (1966: 165) pointed out that Nelson and Goldman were not in Coahuila at all during that year. Peradventure with this in mind, Metcalf (1982: 49) accepted what is regarded here as the "corrected" label as authentic. Taylor was correct: Nelson and Goldman were not at Coahuila during 1898; they were actually at Valles during April 27-29 and May 27-29 of that year, and in the State of San Luis Potosi even longer.

The original locality does not exist and the corrected one appears to be a spurious interpolation, confirmed by the absence of any authentic published records of *Lampsilis (Proptera) salinensis* from the Rio Grande system since the mussel was described almost a century ago. It is almost certain that it does not occur there. It is most probable that all of Simpson's materials came from the Panuco River System. The type locality has therefore been restricted to the second locality, Valles River, Valles, State of San Luis Potosi, Mexico.

Description: Shell usually medium, though reaching over 130 mm in length. Outline somewhat obovate or elliptical. Valves quite compressed, shell solid. Anterior end broadly rounded, posterior end more broadly rounded, tending to be subtruncate. Ventral margin somewhat rounded. Dorsal margin broadly curved. Posterior ridge rounded, ending in a blunt point below the medial line. Unbos slightly elevated above the hinge line, located in the anterior quarter of the shell, without observed sculpture. Ligament long and prominent. Surface of the shell smooth when young, but sometimes with a feebly nodulously sculptured dorsal slope. Some specimens with numerous irregular pit-like impressions, concentric striae and shallow sulci.

Periostracum yellowish-green with wide or narrow greenish rays, or becoming yellowish and brownish in older specimens. Left valve with two subcompressed, ragged pseudocardinal teeth and two lateral ones. Right valve with one large tooth and a vestigial one before it; one lateral tooth. Umbonal cavities shallow. Anterior adductor muscle scars well impressed, posterior ones faint. Pallial line somewhat distinct anteriorly. Nacre white, bluish white or purple, with a wide prismatic border.

Length (mm)	Height (mm)	Width (mm)	
132	87	36	<i>U. discus</i> Holotype, USNM 85341
120	85	37	<i>U. panacoensis</i> Lectotype, MCZ 178882
80	47	25	<i>L. fimbriata</i> Holotype, UMMZ 87579, Probably female
80	52	22	<i>L. fimbriata</i> Paratype, MCZ 167699, Male
70	40	20	<i>L. (P.) salinasensis</i> Lectotype. USNM 163156. Female

Breeding season and anatomy: Ortmann (1912: 332), on the basis of a gravid paratype of *L. fimbriata* that was collected in December, 1906 or January, 1907, said that the breeding season in "winter should be noted." He suggested that the soft parts were in every respect like that of *P. gracilis* [*Leptodea fragilis* (Rafinesque, 1820)], but so were those of other genera, and he tentatively placed *fimbriata* in *Proptera*. He further noted that *fimbriata* lacked the special structure on the edge of the mantle typical of *Lampsilis*.

Remarks: Pilsbry (1910: 533) placed *U. panucoensis* [sic] Busch, *lapidosus* Villa and *connectens* Martens under the synonymy of *D. disca*, all of which Martens (1900: 509, 510) regarded as varieties of it, remarking that "they occur together and fully integrate. The nacre may be white, salmon, or purple." Pilsbry further regarded *salinasensis* Simpson as a synonym of *fimbriata* Frierson as did Ortmann (1912: 332)

and Simpson himself (1914: 188). Pilsbry further suggested that *fimbriata* was related to *Lampsilis strebeli* (Lea) and *discus* (Lea).

In his description of *L. fimbriata*, Frierson does not compare it with any other described species, but mentions that A. A. Hinkley had informed him that C. T. Simpson had an unnamed species so near to, if not identical, to *fimbriata* under the name *Lampsilis salinasensis*, that he did not intend to describe it. Both Frierson and Simpson had received Valles River specimens from Hinckley.

Nevertheless, Simpson's description of *L. (P.) salinasensis* did appear during the following year, 1908. He compared it to *Lampsilis explicata* (Morelet, 1849) (Plate 27, figure 1) and suggested that the former was more obovate rather than true rhomboid, and had more compressed and sharper beaks. He further mentioned that the posterior slope of *explicata* was nearly or quite smooth, whereas that of *salinasensis* was corrugated, but that is true only in young specimens such as the few he had before him, all of which he regarded as females.

Lampsilis explicata (Morelet, 1849) appears to be restricted to the Rio Usumacinta System of Guatemala and Mexico. The several specimens that Simpson had before him collected by Nelson and Goldman from the Rio Usumacinta, Monte Cristo, State of Tabasco, Mexico are all much larger than his specimens of *salinasensis*. They are much more inflated, yellowish or yellowish-brown, with only an occasional hint of rays. The hinges are quite different: the pseudocardinals of *salinasensis* (*disca*) are subcompressed and ragged and an interdentum is present, but in *explicata* the teeth are lamellar and almost parallel to the hinge line, and there is no interdentum. Baker (1922: 23) stated that he could not believe that Simpson would ever confuse a species, even a male specimen, of this group [*D. disca*] with *A. explicata*.

Baker (1922: 21), in his description of *Actinonaias*

(*Disconaias walkeri* (Plate 27, figure 2) from the Rio San Juan system, called attention to the marked dimorphism in older specimens, suggested that older males somewhat resemble *L. fimbriata* Frierson (1907), while those taken from older females have the slightly hooked beaks and humped posterior dorsal margin of *U. discus* Lea, 1838. He then states,

"I think it probably that *Unio discus* (more normal development *U. panacoensis* von d. Busch) is largely based on old female specimens which have reached, in the quieter water of the large river near Tampico, their completely distinctive form, while *L. fimbriata* Frierson, also from the Panuco River System, is a small stream form of the same thing, mainly described from males and from rather immature females that have not developed the characteristic shape of the older specimens. A youngish shell, approaching *L. fimbriata*, in the ANSP from near Tampico, perhaps represents the male of typical *A. disca* (Lea). Some of the young shells of *disca* in the ANSP are indistinguishable from specimens of *L. fimbriata*, which might be regarded as females that had not yet completely developed the adult dimorphism."

Baker (1922: 22) thought that *disca* and *fimbriata* were the same species, but because of their ecophenotypic differences, he chose to regard them as subspecies. Naming ecophenotypic forms was a common practice before the biological species was defined.

Distribution: *Disconaias disca* (Lea) appears to be restricted to the Rio Tamesi and Panuco Systems, Mexico.

RIO TAMESI SYSTEM

Rio Sabinas Drainage. State of Tamaulipas, Mexico: Rio Sabinas, 18 km E Gomez Farias, H. D. Athearn (personal communication).

Rio Guavalejo Drainage. State of Tamaulipas Mexico: Rio Guavalejo, 19 mi ENE Ciudad Mante, MCZ 288410.

RIO PANUCO SYSTEM

Rio Panuco Drainage. State of San Luis Potosi, Mexico: Casas Viejas [River], MCZ 69845; Valles [River] 2 mi. W Mecos, Pilsbry, ANSP; near Valles, USNM 207449. Panuco [River], near Tampico, Tamaulipas, MCZ 316163, ANSP 125585.

Moctezuma [River] Drainage. State of San Luis Potosi, Mexico: Moctezuma River, just below ford, [S Tampamolín], ANSP 99546.

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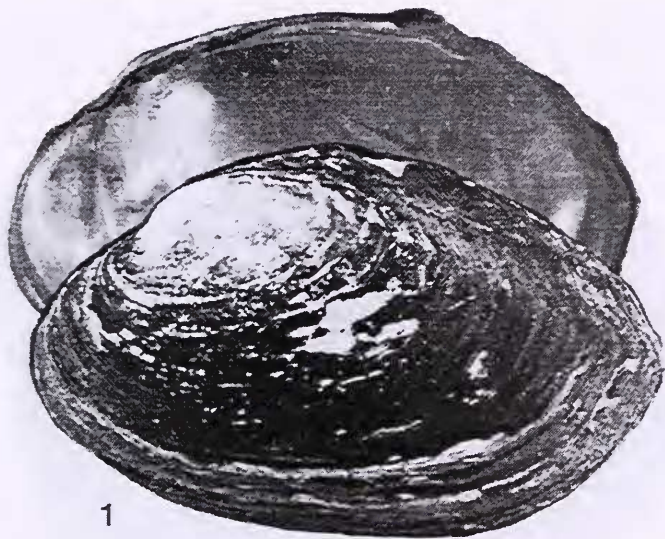
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Plate 22

Potamilis metnecktayi Johnson.

- Fig. 1. Rio Salado, 45 mi. S Nuevo Laredo, State of Tamaulipas, Mexico. Holotype UMMZ 255018. Length 109 mm, height 65 mm, width 33 mm Male (approx. 0.75X).
- Fig. 2. Rio Salado, 45 mi. S Nuevo Laredo, State of Tamaulipas, Mexico. Allotype UMMZ 255019. Length 83 mm, height 56 mm, width 31 m. (reduced).



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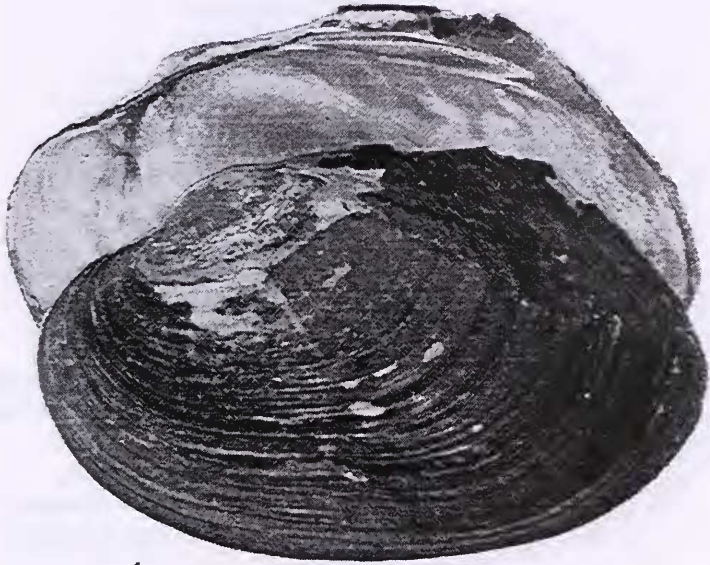
Plate 23

Potamilis purpurata (Lamarck, 1819)

- Fig. 1. *Unio coloradoensis* Lea 1856, PANSP 8: 103 (Rio Colorado, Texas); 1858, JANSF (2) 3: 314, pls. 31, fig. 29; 1857, Obs. Unio, 6: 34. Lectotype USNM 84845 inadvertently selected by Johnson (1975: 32) as the "figured holotype." Length 124 mm, height 77.5 mm, width 44 mm Male (approx. 0.75X).

Cyrtonaias tampicoensis (Lea, 1838)

- Fig. 2. *Unio saladoensis* Lea 1860, PANSP 12: 305 (Rio Salado, New [Neuvo] Leon [State], Mexico); 1860, JANSF (2) 4: 370, pl. 65, fig. 195; 1860, Obs. Unio 8: 52. Figured holotype only USNM [lost]. Length 30 mm, height 22 mm, width 13.5 mm (approx. 2X).



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Plate 23

Plate 24

Cyrtonaias tampicoensis (Lea, 1838)

- Fig. 1. *Unio berlandierii* Lea, 1857, PANSP 9: 101 ([Rio Grande] Matamoras State of Tamaulipas, Mexico; 1860, JANSF (2) 4: 369, pl. 64, fig. 195; 1860, Obs. Unio 8: 52. Lectotype USNM 84427 inadvertently selected by Johnson (1974: 20) as the "figured holotype." Length 87 mm, height 64 mm, width 41.5 mm (approx. nat. size).
- Fig. 2. *Unio heermanii* Lea, 1861, PANSP 13: 392 (Medina River [San Antonio River System], Texas); 1862, JANSF (2) 5: 194, pl. 26, fig. 263; 1863, Obs. Unio 9: 16. Lectotype USNM 83932 inadvertently selected by Johnson (1974) as the "figured holotype." Length 62.5 mm., height 40 mm., width 21 mm. (approx. 1.25X). Topotypes UMMZ 79392 ex J. A. Singley.



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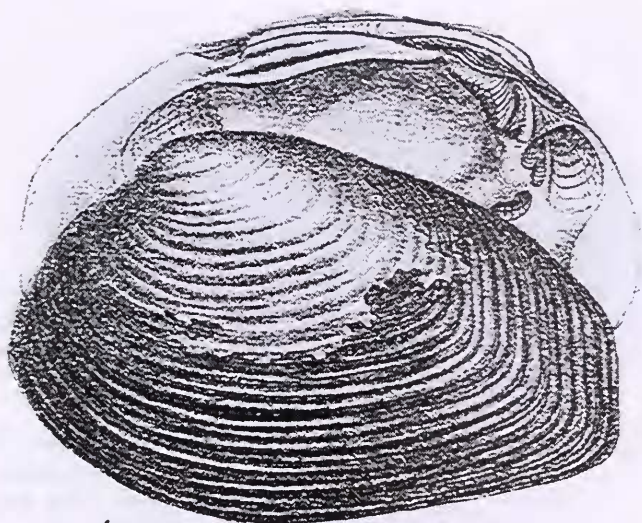
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Plate 24

Plate 25

Disconaias disca (Lea, 1838)

- Fig. 1. *Unio discus* Lea. River Moctezuma [Panuco River System, Mexico]. Holotype (single valve) USNM 85341. Length 123 mm, height 87 mm, width 36 mm (approx. 0.75X).
- Fig. 2. *Unio panacoensis* Busch. [Panuco River, near Tampico, State of Tamaulipas, Mexico]. Lectotype MCZ 178882. Length 120 mm, height 85 mm, width 37 mm (approx. 0.75X).



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Plate 26

Disconaias disca (Lea, 1838)

- Fig. 1. *Lampsilis fimbriata* Frierson. Valles River [near Valles, State of San Luis Potosi, Mexico]. Holotype UMZM 87579. Length 80 mm, height 47 mm, width 25 mm (slightly enlarged).
- Fig. 2. *Lampsilis fimbriata* Frierson. Valles River [near Valles, State of San Luis Potosi, Mexico]. Paratype USNM 207440. Length 87.5 mm, height 54 mm, width 22 mm (reduced).
- Fig. 3. *Lampsilis (Proptera) salinasensis* Simpson. [Valles River, near Valles, State of San Luis Potosi, Mexico]. Lectotype USNM 163156 inadvertently selected by Johnson (1975: 19) as the "figured holotype." Length 69 mm, height 38 mm, width 20 mm (slightly enlarged).

Plate 27

Lampsilis explicata (Morelet, 1849)

- Fig. 1. *Lampsilis explicata* (Morelet). [Rio Usumacincta]. Monte Cristo [now Emiliano Zapata], State of Tabasco, Mexico. USNM 160741. Length 107 mm, height 59, width 32 mm (slightly reduced).

Unio explicatus Morelet 1849. Testacea noviss. insulae Cubanae et Amer. Centralis, Pt. 1: 28 (flumen Usumasinta, ad pagum Balanan Tabascensium). Lectotype BMNH 93.2.4.2027 figured by Fischer and Crosse, 1894, Mission Scientifique au Mexique, pl. 7, 2: 594, pl. 61, fig. 1, inadvertently selected by Johnson (1971: 83) as the "measured holotype."

Unio (Mesonaias) explicatus (Morelet) Crosse and Fischer [in] Fischer and Crosse, 1894, Mission Scientific au Mexique, pt. 7, 2: 556, 594.

Lampsilis explicata (Morelet) Simpson 1914, *Cat. naiades* 1: 176.

Lampsilis (Cyrtonaias [sic]) *explicata* (Morelet) Frierson, 1927, *Check List N. American naiades*, p. 85.

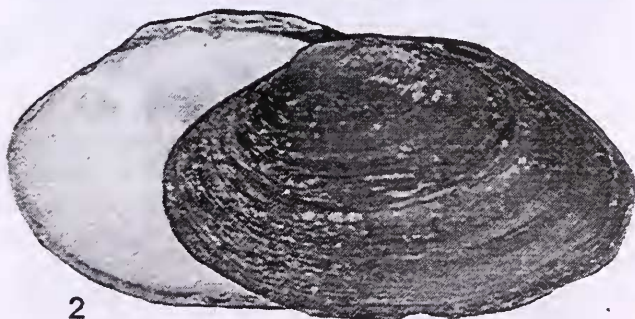
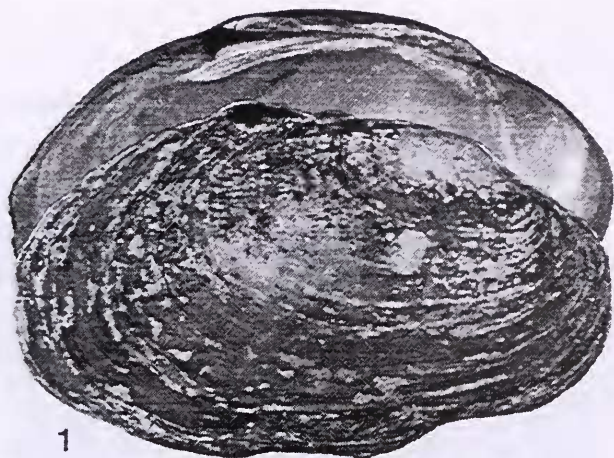


Plate 26

Plate 27 (continued)

Lampsilis explicata (Morelet, 1849) (continued)

- Lampsilis (Mesonaias) explicata* (Morelet) Haas, 1969, Das Tierreich 88: 466.
Unio testudineus Sowerby 1865 [in] Reeve, Conchologia Iconica 16, *Unio*: pl. 22, sp. 101
 (Rio Usumasinto, Portugal [sic], Cuming coll'n) non Morelet 1849.
Lampsilis lividus Simpson 1900, Proc. U. S. Nat. Mus. 32: 571. New name for *Unio*
testudineus Sowerby 1865 non Morelet 1849.
Lampsilis livida Simpson, 1914, *Cat. naiades*, 1: 174.

Distribution

Appears to be restricted to the Usumasinta River system of Guatemala and Mexico.
 USUMACINTA RIVER SYSTEM

Rio Salinas (Rio Chixoy) Drainage. [State of El Péten] *Guatemala*: Rio Chixoy [at Arroyo] Rompido, Ihering USNM 128995.

Rio de la Pasión Drainage [State of El Péten]. *Guatemala*: Rio de la Pasión, USNM 783045.

Rio Usumacinta Drainage. State of Tabasco Mexico: [Rio Usumacinta] Monte Cristo [now Emillano Zapata], Nelson and Goldman, USZM 160741; 5.5 mi. SE Emillano Zapata, F. G. Thompson, MCZ 288408.

Genus *Actinonaias* Crosse and Fischer, 1894

Type species *Unio sapotalensis* Lea, 1841; original designation. Originally described [in] Fischer and Crosse, 1894, Mission Scientifique au Mexique, pt. 7, 2: 556 as a section of *Unio*, *Actinonaias* was raised to a genus by Frierson (1917: 48) as accepted as such by Ortmann and Walker (1922: 47). While reduced to a subgenus of *Lampsilis* by Frierson (1927: 84), it has since been widely accepted as a genus.

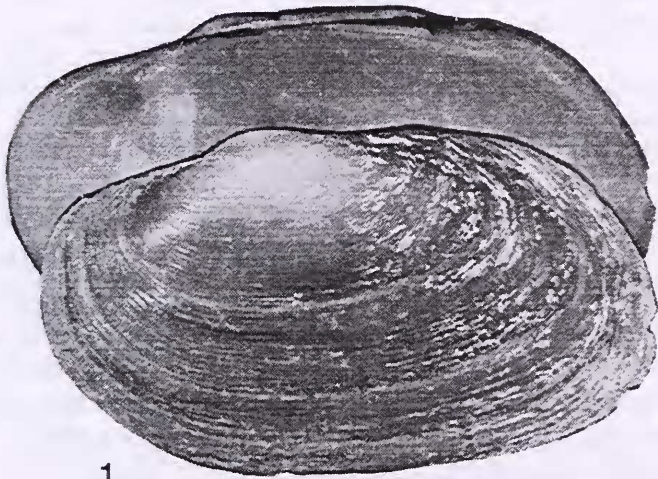
Actinonaias walkeri Baker, 1922

Fig. 2. *Actinonaias (Disconaias) walkeri* Baker. Rio San Juan, near Hacienda de Cutotolapam, State of Vera Cruz, Mexico. Paratype UMMZ 31844 (single valve). Length 101 mm, height 58 mm., width (estimated) 28 mm (slightly reduced).

Actinonaias (Disconaias) walkeri H. B. Baker 1922, Occasional Papers Museum of Zoology, University of Michigan, 106: 20, pl. 1, figs. 1, 2; pl. 9, fig. 49; pl. 10, figs. 48-50; pl. 11, figs. 48, 49 (Rio San Juan, near Hacienda de Cutotolapam, State of Vera Cruz, Mexico; holotype UMMZ 31844, figured on pl. 9, fig. 49); paratypes UMMZ 31844 and ANSP 133694.

Distribution

Known only from the type lot consisting of "fifteen specimens, including odd valves," from the Rio San Juan System and further south from the [Rio Coatzacoalcos], Coatzacoalcos, State of Vera Cruz, Mexico, LACM 111413.



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